

SECTION 9

IMPLEMENTATION

The three alternatives described in Section 8 all meet the goals and objectives of this study. Each alternative is considered feasible, and provide improved access and enhanced safety for the study area. However, each alternative meets these goals and objectives through a unique approach.

The Javelina Alternative includes removing the traffic signal at Soldiers Pass Road and installing traffic signals on SR 89A at Airport Road and Saddlerock Circle. This provides access benefits to properties south of the highway; however, it but revises access patterns north of SR 89A. The potential impacts are primarily to properties north of the highway.

The Coyote Alternative modifies the traffic control along SR 89A from traffic signals to roundabouts. This alternative provides access enhancements to properties both north and south of SR 89A, but there are potential concerns community wide about changing intersection control to roundabouts. Based on current engineering practices, if this section of SR 89A were converted to roundabouts, it may become a logical decision to include roundabouts along the entire corridor.

The Jackrabbit Alternative includes roadway connections south of SR 89A that provide access to the fourth (south) leg of the Soldiers Pass intersection. This alternative provides access benefits to the areas south of SR 89A, and the potential impacts are limited primarily to properties south of the highway.

Selection of one of these alternatives for implementation poses a set of decisions that may result in impacts to properties. These properties may not be reciprocated with benefits from the alternative based on the current circumstances. Therefore, this study is recommending an interim solution be implemented that will meet the needs of immediate traffic concerns, and allow a decision on which alternative to implement be based on future events, known as triggers.

9.1 Recommended Interim Solution

The interim solution recommended is to implement a new traffic signal at Airport Road. The existing traffic analysis indicates this is the only intersection currently operating at LOS F (operational failure). A traffic signal at Airport Road will provide convenient access to SR 89A from Airport Mesa, Saddlerock Circle, and Les Springs neighborhoods. However, implementation of a traffic signal at Airport Road will not maintain long term favorable traffic operations along the SR 89A corridor.

Proper spacing of traffic signals is a key component to maintaining favorable traffic operations along a corridor such as SR 89A. The desirable spacing between traffic signals is one-quarter mile (1,260 feet) or greater. The distance between Soldiers Pass and Airport Road is approximately 800 feet. This reduced spacing between the proposed traffic signal at Airport Road and the existing signal at Soldiers Pass Road raises concerns with this interim solution providing long term favorable traffic operations along SR 89A.

9.1.1 Traffic Operations of the Interim Solution

The primary concern with closely spaced signalized intersections is traffic backing up from one intersection into the other. Traffic stopped at a red light forms a queue of traffic, and depending on the time of the red cycle and the volume of traffic, this queue could extend back into the adjacent

intersection. This queue also has the potential to block side street traffic causing additional delay, which could potentially lead to unsafe traffic maneuvers.

A traffic analysis was completed for the recommended interim solution using the Synchro 6 traffic software for existing 2005 and design year (2025) traffic volumes. A traffic signal at Airport Road is predicted to operate at LOS A during the peak hour in both existing (2005) and the design year (2025), with an average delay of 6.1 sec/vehicle entering the intersection in 2025.

Based on the traffic analysis, the westbound SR 89A traffic was determined to have the most potential for traffic queues during the peak hour. The traffic model predicts lengths of traffic queues based on the timing of the traffic signal and traffic volumes. The software output provides estimates for the 95th percentile queue length (5% of the actual queues may be longer) and the results are shown in Table 9.1.

Table 9.1 – Queuing analysis between Soldiers Pass and Airport Road traffic signals

Design Year	Westbound SR 89A Volume	Volume increase over Existing (%)	Length of Westbound SR 89A Queue (ft)*	Approximate distance between intersections**	Amount of distance between intersections occupied by Queue (%)
Existing (2005)	1253 Veh/hr	n/a	436 ft	740 ft	59%
2025	1465 Veh/hr	17%	653 ft	740 ft	88%
2025+	1610 Veh/hr	28%	774 ft	740 ft	105%

* - 95th percentile queue formed by the Soldiers Pass traffic signal

** - approximate distance available for queuing between Soldiers Pass and Airport Roads

The traffic model indicates that a traffic signal implemented at the Airport Road intersection with existing traffic volumes (2005) will produce a queue that occupies 59% of the distance available between Soldiers Pass and Airport Road on SR 89A. Using the traffic numbers predicted for the year 2025 (17% increase from existing) the predicted queue length increases to occupy approximately 88% of the available space. Once traffic volumes reach an increase of 25%-30% above existing volumes, the traffic queue is expected to extend into the Airport Road intersection from the traffic signal at Soldiers Pass. This condition would not provide acceptable traffic operations on SR 89A. Therefore, the interim solution will eventually need to be replaced with a long-term solution.

9.2 Implementation Triggers for a Long-Term Solution

Implementation of a traffic signal at Airport Road is considered a short-term solution, and there must be a commitment to implement a long-term solution based on certain implementation triggers. The long-term solution for the area would be one of the feasible alternatives included in Section 8 of this report (Javelina, Coyote, and Jackrabbit). An implementation trigger is a future event that will enable a selection of one of the alternatives. Several anticipated implementation triggers are described below;

Traffic Queues along SR 89A –

If traffic queues between the signals at Soldiers Pass Road and Airport Road are observed to occupy more than 75% of the available distance (550 ft) between the intersections regularly during the peak hour. This equates to a queue in excess of 20 vehicles in length observed between the intersections during a peak hour of a typical day with regularity. This trigger would require a solution be adopted that eliminates the closely spaced signalized intersections at Soldiers Pass Road and Airport Road.

Redevelopment plans submitted for property within the study area –

If redevelopment plans are proposed within the study area that would add an appreciable amount of traffic to one of the key intersections within the study area. This trigger would include a development proposal that increases the north or south approach to Soldiers Pass Road, Airport Road, or Saddlerock Circle by over 100 vehicles (individually or combined) during the peak hour. The additional traffic would most likely require a retiming of the traffic signals at Soldiers Pass Road or Airport Road which could potentially impact the traffic operations on SR 89A. This trigger would require the implementation of one of the long range solutions included in Section 8 of this report.

Roundabout Intersections –

If the City of Sedona confirms a commitment to implementation of roundabout intersections along the SR 89A corridor, then the City of Sedona should move forward with the implementation of the Coyote Alternative. The spacing between Soldiers Pass Road and Airport Road is sufficient for two roundabout intersections to provide acceptable operations. If the SR 89A corridor is expected to include roundabout intersections, then Soldiers Pass Road and Airport Road should be converted.